



of movements in each pause in the unwinding movement, they are geared to perform several complete cycles in each pause—for example four cycles.

5 The invention is of course not limited to the particular form wherein the film-gate is moved to produce the successive exposures, as the same effect may be produced in other ways, for example by  
10 interposing a movable mirror device of the known kind between the lens and the film.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is  
15 to be performed, I declare that what I claim is:—

1. A method of colour cinematography of the kind set forth, wherein each

picture area receives a plurality of 20 partial exposures through the same colour-filter at different times.

2. A method of colour cinematography as set forth in Claim 1, wherein a number of successive partial exposures are made 25 on the same number of separate parts of the film, whereupon the said successive partial exposures are repeated in the same order on the same parts of the film a desired number of times. 30

3. The method of colour cinematography substantially as described. .

Dated this 15th day of January, 1916.

BOUTL, WADE & TENNANT,  
111 & 112, Hatton Garden, London, 35  
E.C. 1,  
Chartered Patent Agents.

100,022

PATENT

SPECIFICATION



*Convention Date (Holland), Jan. 19, 1915.*

*Application Date (in the United Kingdom), Jan. 18, 1916. No. 800/16.*

*Complete Specification Accepted, July 20, 1916.*

#### COMPLETE SPECIFICATION.

##### Self-discharging Hopper Barge.

We, NAAMLOOZE VENNOOTSCHAP WERF GUSTO, voorheen FIRMA A. F. SMULDERS, of Schiedam, Maasdijk No. 5 (formerly No. 1), Holland, Engineers and Ship-builders, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by  
5 the following statement:—

It is well known that there are hopper barges, for the loading, conveying and discharging of soil or other material, with or without their own propulsive power or with their own arrangements for dredging and dumping silt, sand, clay or other kinds of soil and which hopper barges consist of a fore-and-aft part,  
10 between which an air-case has been suspended on each side, hinging at the upper side. In loaded condition of the hopper barge these two air-cases are pressed against each other by means of wire ropes, gear wheels or other means, through which the load is held in the hopper; by working these wire ropes, geared wheels etc. the air-cases turn outwards by the weight of the load, which  
15 drops then to the bottom. After the discharge the air-cases close again at the bottom in consequence of the buoyant force.

This construction has different drawbacks, making the execution and the use in actual running difficult, e.g. the connexion between fore-and aft vessel consists chiefly in the two air-cases suspended to the former in a hingeable manner,  
20 which connexion, from the nature of things, can only be made to a somewhat reliable unit with much difficulty and by expensive constructions. The arrangement is further complicated and dear on account of the many turning points and hoisting-devices, whilst the upkeep and attendance are thereby also made expensive. Discharging is moreover hard to regulate on account of the many hoisting  
25 wire ropes, geared wheels etc. and there is therefore the danger, which has manifested itself in practice, that the ropes, teeth, etc. break down in consequence of excessive loads, on account of the unavoidably unequal strain in these ropes, gear wheels, etc., so that the discharging and the closing of the air-cases take place at such a rapid rate as to cause danger to the attendants.  
30 The invention in question prevents the drawbacks mentioned; the vessel is a solid, rigid unit, the number of turning points and hoisting devices is cut in two and accordingly the building—upkeep—and attendance charges; finally, discharging can be regulated at predetermined speed and accuracy for the attendants and the desired dumping opening can be accurately fixed according  
35 to local conditions. Moreover, all the advantages of the well-known hopper-

[Price 6d.]

barge-system have been preserved. This invention is shown on the enclosed drawing in some designs.

Figure 1 shows a cross section of a hopper barge in closed condition.

Figure 2 shows a cross section of a hopper barge however in open condition.

Figure 3 represents a cross section of a hopper barge in a somewhat different 5 design.

Figure 4 shows a top view of a hopper barge.

The hopper barge *a* is composed of a forepart *b* and an aft-part *c*, both of which parts are rigidly connected by the air-case *d*, which is situated on one side of the vessel.

Figures 1 and 3 show different examples of construction forms of the air-case *d*. At the other long side of the vessel the air-case *e* is hingeably suspended between fore and aft-vessel, this air-case being of such form and dimensions that in un-loaded condition of the hopper barge it fits against the bottom of the air-case *d*. The air-case *e* is kept closed in the loaded position by the piston rods of liquid pressure-devices *f*, the liquid for which is supplied by a force-pump. By allowing the liquid to escape, the hopper opens at the bottom by the weight of the cargo; by regulating the escape of liquid the speed of the discharge can be controlled at will. When the hopper has been completely emptied the air-case *e* fits itself automatically to the air-case *d*.

To prevent the soil or the material from clinging to the wall of the air-case *d* during discharge a water-flushing-device *g* is fitted at or near the top of such wall, by which water can be forced along the wall, thereby clearing the soil or material from same. If water is used for the above-named liquid-pressure device, the water escaping from the cylinders can be used for loosening the cargo.

Having now particularly described and ascertained the nature of our said invention and in what manner the same is to be performed, we declare that what we claim is:—

1. Self-discharging hopper barge for the loading, conveying and automatic discharging of soil or other material, characterised that one air-case, being one side of the hopper space is formed as a rigid part of the vessel, whilst the other, movable, side of the hopper is formed by another air-case.

2. Self-discharging barge as in Claim 1, characterised in that the movable wall and bottom in the loaded position of the barge are kept in place by liquid-pressure-devices and are displaced over an arbitrary distance for the discharge 35 of the cargo.

Dated this 17th day of January, 1916.

STEPHEN WATKINS, SON & GROVES,  
Metropolitan Chambers, Wolverhampton,  
Agents for the Applicants.

100,023

PATENT



SPECIFICATION

*Convention Date (United States), Jan. 18, 1915.*

*Application Date (in the United Kingdom), Jan. 18, 1916. No. 803/16.*

*Complete Accepted, June 1, 1916.*

#### COMPLETE SPECIFICATION.

#### Improvements in and relating to Packings for Pistons and the like.

We, BAY STATE PUMP COMPANY, a corporation duly organized and existing under the laws of the State of Massachusetts, and having a place of business at 60, State Street, Boston, Suffolk County, State of Massachusetts, United States of America, Manufacturers, Assignees of ANTON MARIUS VEDOE, residing at No. 101, Bowdoin Street, Medford, in the County of Middlesex and Commonwealth of Massachusetts, United States of America, formerly of 81, Swan Street, Everett, Massachusetts, aforesaid, do hereby declare the nature of this invention, and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

This invention relates to improvements in packings for the pistons of pumps, engines and other devices of the class comprising a metal ring having a web portion between two tapered marginal portions and which when employed in conjunction with tapered glands or like parts cause the web portion to bulge inwardly and thus to tighten upon any reciprocating part it surrounds.

In connection with the above improvements a manner of utilizing same in a cylinder and casing co-acting with a piston, forms a part of the invention.

The main feature of the present invention in connection with the ring is that one or both of the marginal portions is or are so thin that the bevelled edge or edges are flexible or knife like so that compression of the marginal portions toward each other causes the web and the edge or edges to contract inwardly into intimately conforming engagement with the element to which the ring is applied.

The invention is illustrated by an example of same in the accompanying drawing in which:—

Figure 1 is a vertical section through an illustrative pump shown herein as equipped with a packing construction embodying the invention;

Figure 2 is a vertical section taken on the broken line 2—2 of Figure 1;

Figure 3 is a detail of the packing ring; and

Figure 4 is a transverse section through the ring shown in Figure 3.

Referring to the drawing, the casing 1 is a part of a cylinder, the upper part being a cap 3. A portion of this cap may be knurled to facilitate the securing thereof to said casing. The cap is provided with a fixture 5 containing usual inlet and discharge valves unnecessary to show herein.

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Mounted within the cylinder is a piston 7 adapted to reciprocate therein past the union of the two parts of the cylinder, and made in cup form in which may be inserted a head 9 pivotally connected to one end of a rod 11, the opposite end of which is connected to the pin 12 of a crank 13 on a shaft 15 journaled in a bearing in the casing 1 and provided with a pinion 17 driven 5 in any suitable manner.

For convenience of assembly, the rod head 9 may be detachably connected to the cup piston. To accomplish this opposed springs 19 are provided, having reduced ends adapted to seat in recesses 21 in said head, and lugs 25 adapted to be sprung into the wall of said piston from the interior thereof. 10 When these springs are snapped in place they effectively hold the head securely in said piston.

The packing ring 27 is of Babbitt metal or other appropriate material formed to present thin marginal portions 29 having sharp bevelled flexible knife like edges and a groove 31 forming a web between said portions which web is thinner than said marginal portions. The ring is located substantially at the juncture between the cylindrical portion of the casing 1 and the cylindrical cap 3. The casing is formed to present a tapered seat 33 to receive the lowered bevelled end of the ring, and the cap is formed to present a tapered portion 35 for engagement with the upper tapered end of said ring. 15 20 The taper of the seats 33 and 35 is preferably at a somewhat sharper pitched angle than that of the bevel ends 29 of the ring.

When the cap 3 is screwed down into the casing 1, the seats 33 and 35 will press the flexible knife like edges of the ring into intimate engagement with them and prevent any possibility of leakage between them. This compression of the marginal portions of the ring toward one another, tends to bulge the web or thin portion of the ring opposite the groove 31 circumferentially inwardly into intimate contact with the piston, which further contributes to the prevention of leakage between the cylinder and the piston. In fact, the construction and arrangement are such that substantially the entire 30 inner surface of the packing ring is pressed into light yielding engagement with the piston.

While the ring is shown herein as provided with both edges bevelled or flexible or knife like, it will be understood that in some cases one end alone might be bevelled, if desired.

We do not lay claim to a cylinder formed in two portions screwed together, and carrying at the point of attachment compressible packing rings for a reciprocating part as that and variations of same are well known.

Having now particularly described and ascertained the nature of our said invention and in what manner the same is to be performed, we declare that 40 what we claim is:—

1. A packing ring having a circumferentially continuous web portion between two thin end or marginal portions, said web portion being thinner than said marginal portions, and one or both of the latter having flexible, knife-like edges, whereby compression of said end or marginal portions toward each other will cause said web and edge or edges to contract inwardly into intimate conforming engagement with the element to which the ring is applied.

2. The combination with a packing ring of the character claimed in Claim 1, of a cylinder and casing between which said packing ring is located, so as to surround a cylinder piston, and in which the cylinder and casing are connected together for axial adjustment and carry seats for the end or marginal portions of said ring for the purposes described.

3. The packing ring constructed and operating substantially as described with reference to the accompanying drawings.

4. The combination of the cylinder, casing and packing ring all constructed and operating substantially as described with reference to the accompanying drawings.

Dated the 18th day of January, 1916.

5

PHILIP M. JUSTICE,  
Chartered Patent Agent,  
London,  
For the Applicants.

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## PATENT



## SPECIFICATION

*Convention Date (United States), Jan. 18, 1915.*

*Application Date (in the United Kingdom), Jan. 18, 1916. No. 810/16.*

*Complete Accepted, June 15, 1916.*

## COMPLETE SPECIFICATION.

## Improvements in Beaters or Mixers.

I, LAVERN BORDWELL, of 1133, Broadway, New York City, New York, United States of America, Manufacturer, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

5 This invention relates to improvements in beaters or mixers the primary object of the invention being to provide a beater comprising beater-blades and actuating means therefor of simple construction and at the same time durable and easy to operate.

10 The invention particularly relates to an improved manner of constructing the beater-frame upon which are mounted actuating means and beater-blades so that all parts of the frame will be rigid and thereby insure a true alignment of the beater-blades and actuating means whereby these parts will operate to the best advantage.

15 Heretofore beaters have been made very similar to beaters according to the present invention but so far as I am aware these known beaters are subject to the following defects:—

First. When made of simple construction they were not durable.

20 Second. The framework when under the stress of the operation of beater-blades and operating mechanism would bend and twist so that these mechanisms would be thrown out of alignment and the perfect operation of the beater materially hampered.

25 Third. In very large beaters where the framework was of greater size even greater difficulties were encountered both as to bending and twisting of the framework and also in the disarrangement of the actuating mechanism in relation to the beater-blades which are driven thereby.

My invention though of simple construction, and though cheap to manufacture overcomes the above noted difficulties.

Further objects and advantages of the present improvement will be set forth in the following description and appended drawings in which:—

30 Figure 1 is a side elevation of my improved beater showing beater-blades and an actuating means mounted upon my improved framework.

Figure 2 is a detail fragmentary perspective view of a portion of the beater framework.

35 Figure 3 is a perspective view of the wire support upon which the beater-blades are mounted.

Figure 4 is a perspective view of a modified form of beater framework showing the beater-blades actuating means and handle removed therefrom.

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Figure 5 is a detail enlarged perspective view of the clamp used in connection with the modified form shown in Fig. 4.

Figure 6 is an enlarged sectional view of the top of the supporting wire shown in Fig. 4 and of its connection with the beater-frame.

Figure 7 is a sectional view taken on the line 7—7 of Fig. 5.

Referring now to the drawings in which like reference numerals designate similar parts, 1 represents a substantially vertical body portion of the beater framework carrying at its upper end a handle 2, and at its lower end being bent and doubled back upon itself to form a substantially U-shaped portion consisting of two vertical walls 3 and 4 and one horizontal wall 5. At the point 6 on the beater-frame an actuating gear wheel 7 is pivoted, and this gear wheel is rotated by means of a crank 8 and handle 9.

Attention is called to the fact that the substantially U-shaped portion of the frame is squared at the points 10 and 11 and right angles formed at the junction of the vertical walls 3 and 4 and the horizontal wall 5. These right angles are formed in the frame for the purpose of giving rigidity and strength to it to take up and compensate for the strains which are put upon this frame during the operation of the actuating gear-wheel and beater blades hereinafter to be described.

At the centre of the vertical wall 3 of the beater framework there are two portions 12, struck out of the outer surface, and one portion 13 on the inner surface, the portion 13 being between the two portions 12 and the several struck out portions forming vertical rectangular openings. The other vertical wall 4 is similarly provided with two outwardly struck portions 14 and one inwardly struck portion 15. In addition, however, the upper edge of the vertical wall and integral with the upper struck out portion 14 is provided a horizontally extending lip 19 providing a stop for the upper end of the beater supporting wire hereinafter to be described. These struck out portions are for the purpose of receiving the upper ends of the substantially U-shaped supporting wire 16 upon which beater blades 17 are mounted, carrying at their upper ends and adjacent the lower edge of the vertical members 3 and 4 gear-wheels 18 which mesh with the actuating gear 7. The upper portion of the two ends of the wire support 16 are flattened so as to be of rectangular cross-section as shown at the point 20. It is to be understood, however, that these wires may be flattened to present any number of sides without departing from the spirit and scope of the present improvement. This portion 20 is of a length equal to the combined lengths of the struck out portions carried by the vertical portions 3 and 4. Due to the shape of these wires when they are once inserted between the struck out portions, they will be held rigidly and cannot be twisted or rotated in the struck out portions as would be the case were they of circular cross-section as is the remainder of the supporting wire 16. No specific claim is made herein upon the beater-blades 17 or their specific connection with the gears 18, as this manner of making beater-blades and this way of connecting them is old in the beater art. Particular attention, however, is called to the specific manner of arranging the struck out portions upon the vertical walls 3 and 4. Due to the arrangement of these struck out portions as shown, the upper ends of the supporting framework wire 16 are securely clamped and when this wire is put under the stress of the rotating beater-blades, it cannot be bent or twisted side-wise but will remain perfectly rigid and will insure at all times a perfect alinement of the small gears 18 with the large actuating gear 7.

The foregoing description relates and describes the smaller form of beater which is adapted for ordinary household use, but when the beater is made of a greater size to facilitate its use in hotels, bakeries, etc., the construction of the beater blades supporting wires is different, and the description of this modification will now be taken up.

Referring to Fig. 4, it will be seen that the lower U-shaped portion of the

beater framework is of substantially the same construction as shown in Fig. 1, and the assembling of the upper ends of the **U**-shaped supporting wire with the struck out portions is also identical with that shown in Fig. 1. In this modified form of beater, however, an additional supporting wire 21 is provided which is of substantially a **U**-shape, the upper ends 22 thereof being fastened within the horizontal portion 5 of the beater framework in a specific manner hereinafter to be described. The supporting wire 21 is arranged at right angles to the main supporting wire 16. The supporting wire 16, unlike its construction in Fig. 1, is deeply notched at the point 25 forming a seat for the auxiliary supporting wire 21. Extending ends 23 and 24 are formed on each side of the notch 25. At the point 26 the auxiliary supporting wire 21 is flattened on its top and bottom for the purpose of assisting in receiving a clamp 27, which is of the shape of a cross, the legs of the cross being of sufficient shape to be bent in their centers and thence up and around the two ends 23 and 24 of the supporting wire 16 and also around the supporting wire 21 adjacent its junction with the ends of the supporting wire 16. This clamp firmly locks these two wires together and at the same time also clamps the ends 23 and 24 of the supporting wire 16 together. Due to the deep notch in the beater blade supporting wire the bottom of the beater support is nearly as flat in the modified construction as in the construction shown in Fig. 1. This is due to the fact that the supporting wire 16 is deeply notched as before described.

The specific manner of attaching the upper ends 22 of the auxiliary supporting wire 21 consists in first cutting a **V**-shaped notch 28 in the periphery of the wire and then passing the wire through a hole 29 formed in the horizontal surface 5 of the framework. After the ends 22 are in position in the holes 29, they are struck with a tool at the point 30 and the metal of the horizontal portion 5 driven into the notch 28 as is shown in Fig. 6. This construction forms a positive lock for holding the end 22 in the same position relative to the horizontal portion 5 and will prevent it from either slipping up or down out of the holes 29.

From the foregoing description, it will be seen that I have evolved a cheap and simple beater framework which when assembled will never come apart through use of the beater, and will at all times be so rigid and fixed that the actuating means for the beater-blades will always be in true alinement one with the other, and that the framework will not be twisted and thereby clog the gears.

Having now particularly described and ascertained the nature of the said invention and in what manner the same is to be performed, I declare that what I claim is:—

40 1. An improved beater or mixer comprising a framework, said framework consisting of a substantially vertical body-portion, a handle carried by the upper end thereof, the lower end of the body portion being bent and doubled back upon itself to form a substantially **U**-shaped portion, the said **U**-shaped portion being squared so as to have one horizontal wall and two vertical walls 45 arranged at right angles to each other, beater blades carried by the **U**-shaped portion of the framework, and actuating means carried by the vertical portion of the framework.

50 2. A beater or mixer according to the preceding claim wherein the two vertical walls of the bent lower end of the body portion each have struck out portions forming vertical openings within which are fitted the upper ends of a beater supporting wire on which beater blades are mounted.

55 3. A beater or mixer according to Claim 2 wherein some of the struck out portions of the vertical walls project on the outside of the vertical wall and some project on the inside thereof.

4. A beater or mixer according to Claim 2 wherein the struck out portions of the vertical walls are shaped to form rectangular recesses, the beater support-

ing wire having the upper ends which fit within the struck out portions of rectangular cross section, a lip carried by the upper edge of one of the vertical walls of the framework forming a stop to limit the upward movement of one of the ends of the beater supporting wire.

5. A beater or mixer according to Claim 2 comprising an auxiliary beater 5 supporting wire of substantial U-shape arranged at right angles to the main beater supporting wire, the upper ends of the said auxiliary supporting wire being fastened within the horizontal portion of the framework.

6. A beater or mixer according to Claim 5 wherein the lower end of the beater supporting wire is formed with a notch that constitutes a seat to receive 10 the lower portion of the auxiliary supporting wire, a clamp being provided for clamping the beater supporting wire to the auxiliary supporting wire.

7. A beater or mixer according to Claim 6 wherein the clamp consists of four arms, two of the arms being bent up around the two ends of the beater supporting wire, and the other ends of the clamp being bent up around the 15 auxiliary wire adjacent to its junction with the ends of the beater supporting wire.

8. Beaters or mixers constructed substantially as hereinbefore described with reference to and as shown in Figs. 1, 2 and 3 and in Figs. 4 to 7 inclusive to the accompanying drawings. 20

Dated this 18th day of January, 1916.

For the Applicant,

LLOYD WISE & Co.,  
10, New Court, Lincoln's Inn, London, W.C.,  
Chartered Patent Agents. 25

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100,025

PATENT

SPECIFICATION



*Convention Date (United States), Jan. 21, 1915.*

*Application Date (in the United Kingdom), Jan. 19, 1916. No. 899/16.*

*Complete Accepted, June 15, 1916.*

#### COMPLETE SPECIFICATION.

#### Improvements in Machines for Seaming Cans or Tins.

We, E. W. BLISS COMPANY, a corporation organized under the laws of the State of West Virginia, United States of America, and having our principal office at corner of Adams and Plymouth Streets, in the Borough of Brooklyn, City of New York, United States of America, Manufacturers of Machinery,  
5 Assignees of PETER KRUSE, a citizen of the United States of America, residing at No. 255, Van Buren Street, in the Borough of Brooklyn, City of New York, United States of America, Mechanical Engineer, do hereby declare the nature of this invention, and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

10 This invention relates to a machine for producing hygienic cans or "tins" and more particularly for securing the head or cover to a can body either by preliminary clenching or finally by means of a double seam in a novel, quick and effective manner.

Briefly stated the machine comprises a pair of concentric seaming rings of  
15 comparatively large diameter and arranged in a common plane, the radial distance between said rings being somewhat larger than the diameter of the cans to be sealed, so that the latter can be in operative engagement with but one of said rings at a time. These rings or annular seamers receive continuous rotary movement in opposite directions while the cans together with their  
20 covers are freely rotatable between said rings and do not receive any positive rotary movement whatsoever. During operation, the means for supporting the cans are automatically moved toward one of the rotary rings so that the cans engaging said ring will be rotated on their axes during which operation the flange of the can head is curled about the flange of the can body. This  
25 operation being completed, the supporting means are moved toward the other ring that rotates in the opposite direction, so that the preliminarily seamed cans, after their engagement with the second ring continue to rotate in the same sense as before, the second ring compressing or flattening out the seam so as to provide the desired tight closure for the can. The invention also  
30 comprises numerous other novel features of construction as fully brought out in the annexed specification and claims.

In the accompanying drawings,—

[Price 6d.]

Figure 1 is a side view partly in section of a double seaming machine embodying my invention;

Fig. 2 a vertical section on the line 2—2, Fig. 1;

Fig. 3 a similar section on line 3—3, Fig. 1, looking toward the left;

Fig. 4 a section on the line 3—3, Fig. 1, looking toward the right, with 5 some of the parts omitted;

Fig. 5 an enlarged cross section on line 5—5, Fig. 4;

Fig. 6 a cross section on line 6—6, Fig. 3;

Fig. 7 an enlarged cross section through the seaming rings, a can to be seamed, and part of the can supporting means;

Fig. 8 a cross section through the seam as produced by the preliminary seaming ring; and

Fig. 9 a cross section through the seam as finished by the closing ring.

Within a pair of standards 10, 11 forming part of the machine frame, is journaled a horizontally extending main shaft 12 which receives rotary movement from a driving pulley 13 loosely mounted upon a shaft 14.

Pulley 13 is adapted to be coupled to shaft 14 by a clutch 15 operated by hand lever 16 which shaft in turn, transmits motion through a train of gears 17 to the main shaft 12. Upon the latter are firmly mounted the hubs 18, 19 of a pair of opposed circular can carriers 20, 21, respectively. Of these, carrier 20 is shown to have the additional function of rotatably supporting two concentric seaming rings 22, 23, arranged in a common plane. One of these rings, say ring 22 is so profiled as to curl the flange 24, of the can head 25 about the flange 26 of the can body 27 (Fig. 8), while the other ring 23 is profiled for compressing or tightening the preliminary seam formed by ring 22 (Fig. 9), whereby the desired hermetical sanitary can seal is obtained.

As is clearly apparent from Figs. 1 and 7, the radial distance between the rings 22, 23 exceeds the outer diameter of the cans to be seamed so that while a can engages ring 22, it clears ring 23 and *vice versa*.

The means for rotatably supporting the can bodies together with their heads and for consecutively presenting them to the action of seamers 22, 23 are as follows:

Carrier 20 is provided (Fig. 4) with a plurality of—say six—oblong openings 28 surrounded by similarly shaped bosses 29. Within each opening 28 is radially movable a slide 30 which is guided by gibs 31. Each slide 30 is in turn provided with an opening 32 adapted for the reception of a bearing block 33, which is guided along gibs 34 secured to both sides of slide 30, and may be radially adjusted by a pair of set screws 35 or otherwise.

Block 33 is provided (Fig. 5) with a central bore 36 that extends in parallelism with shaft 12. Within this bore is slidably mounted a spindle 37 between a fixed collar 38 of which and block 33, is interposed a coiled spring 39 tending to force spindle 37 toward carrier 21, this movement of the spindle being limited by a collar 40 to the spindle. To the spindle is rotatably secured the hub 41 of a disk 42 adapted to engage the recessed can head 25 (Fig. 7), between said hub and spindle 37 being interposed a ball race 43 (Fig. 5).

Carrier 21 is in similar manner provided with six openings 44 along each of which is movable a slide 45 guided by gibs 46. A central opening of this slide accommodates a bearing block 47 which is radially adjustable by set screws 48. Within a bore of block 47 is axially slidable a spindle 49 carrying at its inner end a disk 50 that is adapted to engage the bottom of a can, a ball race 51 being interposed between said disk and spindle.

At its outer end, spindle 49 carries a cam roller 52 adapted to engage a stationary cam 53 attached to standard 11, the cam roller being forced toward said standard by a spring 54. It will thus be seen that as long as roller 52 rides along cam 53, a can 27 and its head 25 will be firmly clamped between the freely rotatable disks 42, 50 (upper part of Fig. 1), so as to permit the seaming operation to be properly performed, as will hereinafter be more fully

described, while upon leaving said cam (lower part of Fig. 1), disk 50 is retracted in order to permit the discharge of the seamed can and the introduction of a fresh can to be seamed.

- The cans together with the heads loosely applied thereto, are shown to be fed through a chute 55 to a recessed turret 56, a curved guard 57 keeping the cans in engagement with said recesses during the rotation of the turret in the direction of the arrow *a* (Fig. 2). Slightly prior to the arrival of a can in horizontal alinement with main shaft 12, cam roller 52 will ride along the bevel 58 of cam 53 to finally clamp the can and its cover between disks 42, 50.
- Immediately after a can has thus been properly grasped, the continued action of the cam incline 58 advances the disk 50, and through the cam the disk 42, until the cam head is brought into the plane of the cam rings 22, 23; thereupon the two cooperating slides 30, 45 are unisonally moved toward the preliminary seaming or clenching ring 22. The latter is firmly secured to a flanged ring 59 having a tapering inner rim 60 that is rotatably held to carrier 20 by means of a correspondingly tapering guide ring 61 attached to said carrier in suitable manner. Ring 59 is furthermore toothed as at 62 for engagement with a toothed reversing wheel 63 loosely mounted in a bracket 64 that also supports the inner end of shaft 14. Toothed wheel 63 engages in turn a similar wheel 65 fast on shaft 14, so that continuous rotary movement is imparted to seaming ring 23.

The means hereinbefore referred to for moving slides 30, 45 toward seamer 23 comprise essentially a substantially quadrantal cam 66 (Fig. 3) adjustably secured to the inner face of standard 10, and provided with a beveled end 67. One end of cam 66 is perforated as at 68 (Fig. 6) for the reception of an eccentric headed collar 69 of a threaded pin 70 having a squared end 71 and adapted to be fixed in the position to which it has been set, by clamp nut 72. To the other end of cam 66 is connected the eye 73 (Fig. 3) of a screw bolt 74 loosely passing through a perforated lug 75 of standard 10 and held in position by clamp nuts 76. Cam 66 is adapted to be consecutively engaged by the cam rollers 77 of the several slides 30, cam rollers 77 being rotatably supported by the radially extending arms 78 of said slides (Figs. 1 and 4). In like manner, standard 11 is provided with a quadrantal cam 66<sup>1</sup> between which and the standard, is interposed a spacing segment 79 so as to expose the cam 66<sup>1</sup> in front of cam 53, the means for radially adjusting cam 66<sup>1</sup> being in all respects duplicates of the means described in conjunction with cam 66. Cam 66<sup>1</sup> is adapted to be consecutively engaged by cam rollers 77<sup>1</sup> of the several slides 45 cam rollers 77<sup>1</sup> being rotatably supported by the radially extending arms 45<sup>1</sup> of these slides.

- As thus far described, it will be seen that as soon as a can 27 and its head have been properly placed between disks 42, 50 by turret 56, disk 50 is advanced by cam 53 toward disk 42 so as to firmly clamp the can and its head in position while nevertheless permitting a free rotation of said can and head owing to the interpolation of the ball races 43, 51 between disks 42, 50, and their respective spindles. As soon as the can has thus been firmly grasped, rollers 77, 77<sup>1</sup> engage the beveled faces of cams 66, 66<sup>1</sup> whereupon they will roll along the cam faces 80, 80<sup>1</sup> of such cams, so that slides 30, 45 are drawn inward. In this way the flange 24 of the can head 25 is brought into engagement with the preliminary seaming ring 22 to curl said flange about the flange 26 of the can body until the flanges have been shaped as illustrated in Fig. 8. After this operation has been performed, slides 30, 45 are forced outward to cause a disengagement between the curled flange 24 and ring 22, and to bring said flange into engagement with the seam-closing ring 23. The latter is firmly secured to a ring 81, having a tapering outer rim 82 that is rotatably held to the carrier 20 by a tapering guide ring 83. Ring 81 is toothed as at 84 for engagement with a pinion 85 fast on shaft 14. In order to bring the can into engagement with ring 23, standards 10, 11 are respectively provided

with substantially quadrantal cams 86, 86<sup>1</sup> the cams 86<sup>1</sup> being duplicates of cams 86. One end of each cam 86 (Fig. 3) is, by eccentric stud 87, adjustably secured to standard 10, while its other end is connected to a screw bolt 88 loosely passing through a perforated lug 89 of standard 10 and adapted to be clamped in position by nuts 90. Upon the engagement of rollers 77, 77<sup>1</sup> with cams 86, 86<sup>1</sup>, slides 30, 45 are forced outward so as to bring the preliminary seam formed by ring 22 into engagement with the closing ring 23. The latter causes a flattening or closing of the double-seam as illustrated in Fig. 9. The double seam being thus completed, roller 52 of disk 50 leaves cam 53 thereby permitting spring 54 to withdraw said disk from the can bottom, the seamed can being thus free to drop off disk 42 into a suitable discharge chute (not shown). 5

In order to prevent an accidental sticking of cans to disks 42, spindles 37 are made tubular for the accommodation of push pins 91 (Fig. 5) provided with heads 92 between which and collars 40, springs 93 are interposed. Heads 92 are adapted to engage a short cam 94 (Fig. 1) of standard 10, said cam being so located that as soon as a roller 52 has cleared cam 53, and disk 50 has been retracted from the seamed can, the head 92 of the corresponding pin 91 is forced inward by cam 94 thereby causing a similar movement of the pin so as to kick the double seamed can off disk 42. 15 20

In order to insure a subsequent true axial alinement of the disks 42, 50 with the cans as presented by turret 56, a pair of centering cams 95, 96 (Fig. 3) are secured to standards 10, 11 by screw bolts 97 passing through corresponding slots 98 of the standards so as to render said cams adjustable relatively to the center of the can-supporting turret-pockets, and also for the purpose of adapting the machine to cans of different diameters. 25

It will be seen that a machine constructed as above described has numerous advantages over the double seaming machines heretofore known. Although the carriers for the cans to be seamed simultaneously support a plurality of cans, all of such cans are acted upon by the same seaming means so as to insure a positively uniform output. Should an inspection of the delivered headed cans show that the seam is either excessively flattened or not sufficiently tight, this deficiency may be readily corrected without necessitating a stopping of the machine, by correspondingly adjusting the cams 66, 66<sup>1</sup>. The machine may also be readily adapted to cans of different diameters by employing cam rollers 77, 77<sup>1</sup> of different diameters, and thereby correspondingly varying the radial strokes of slides 30, 45. Of course the distance between cams 95, 96 should also be adjusted to the proper diameters of the cans. 30 35

When the cans to be seamed are consecutively brought into contact with rings 22, 23, they are taken along by friction to be rotated as desired, without requiring any positive driving means. In order not to change the direction and speed of rotation of the cans after they have been shifted from contact with the crimping ring 22 into contact with the closing ring 23, said rings are so driven as to rotate in opposite directions and at a different speed. As with the construction described the cans travel along the space formed between the seaming rings in the direction of arrow b (Fig. 2) and as ring 22 rotates in the same direction it is obvious that this ring should travel at a higher speed than the cans, while ring 23 which rotates in a direction opposite to the can travel should be rotated at a lower speed, in which respect also the difference in the operative diameters of rings 22, 23 should be taken into consideration. 40 45 50

Although the machine is shown in the drawings to be designed for double seaming the cans in a horizontal position, it is obvious that the arrangement of the parts may be so altered as to permit the seaming of cans containing a fluid, in an upright position, and that other changes may be made without departing from the spirit of my invention. It is obvious that the machine may also be employed for clinching can heads to can bodies, in which case one of the seaming rings may be omitted. 55

Having now particularly described and ascertained the nature of our said invention, and in what manner the same is to be performed, we declare that what we claim is:—

5. 1. A machine of the character described comprising means for rotatably holding a can, a rotative annular seamer, and means for moving the can radially during its motion and bringing the can head into rotative engagement with the seamer, whereby the can is revolved and its flanges are turned in by said seamer.
10. 2. A machine according to Claim 1 having a pair of rotative annular seamers, and means for moving the can to engage it with the respective seamers consecutively.
15. 3. A machine according to Claim 2 having the pair of annular seamers arranged in a common plane with an annular space between in which space the can head travels, and means for moving the can radially to engage it with the respective seamers consecutively.
20. 4. The machine of Claim 2 having means for rotating the respective annular seamers in opposite directions, so that both shall rotate the can in the same direction.
25. 5. The machine of Claim 4 wherein the seamers rotate at different rates of speed, for the purpose described.
25. 6. A machine according to Claim 1 comprising a pair of spaced concentric annular seamers, means for rotating said seamers in opposite directions, can-holders for rotatably supporting the cans, means for rotating said can-holders thereby advancing the cans along the space formed between the seamers, and means for radially reciprocating the can-holders, thereby bringing the cans into consecutive engagement with the seamers.
30. 7. A machine according to Claim 1, comprising a rotary carrier, an annular seamer supported by the carrier, and multiple can holding means also supported by the carrier and movable to present the cans to the action of the seamers.
30. 8. A machine according to Claims 1 and 7, with means for rotating the seamers independent of the carrier.
35. 9. A machine according to Claim 1, comprising a rotary carrier having radially movable slides, multiple can-holders carried by said slides, means for radially reciprocating said slides, and annular seamers engaged by the can heads.
35. 10. A machine according to Claims 1 and 9 having cam means for radially reciprocating the slides.
40. 11. A machine according to Claims 1, 9 and 10, having sector-like cams for reciprocating the slides, said cams being radially adjustable to vary the engagement of the can heads with the seamers.
40. 12. A machine according to Claims 1 and 9, having a block in each slide carrying the spindle of the can-holder, and a stationary cam for moving said spindle longitudinally.
45. 13. A machine according to Claims 1 and 9, the can-holders comprising rotative spindles and disks for engaging the opposite heads of the cans, both spring-mounted and movable longitudinally of the spindles, with a cam for moving one spindle of each holder to first clamp the can and then bring its head to the plane of the seamers.
50. 14. A machine according to Claims 1 and 7, having feeding means for delivering successive cans to the can-holders, the latter comprising each two disks for engaging the opposite heads of the can, and having means for closing the disks together to clamp the can coincident with its delivery from the feeding means.
55. 15. A machine according to Claims 1 and 7, comprising a rotary shaft, a pair of opposed carriers fast thereon, a first disk yieldingly and rotatably mounted on one of said carriers, an axially movable rotatable second disk mounted on the other carrier in axial alinement with the first disk, means for

shape of which corresponds to the conicity of the sleeves 4, 5 and the part 16.

The described coupling device acts in the following manner. In the drawing the said pulley is shown as disengaged from the sleeves 4, 5 rotating with the shaft 2 and is carried by the part 16 of the stationary sleeve 9. For bringing the sleeves 4, 5 into engagement with the pulley, the hand wheel 13 is rotated in such a direction that the sleeve 9 is moved inward in the bearing block 1. This results in the sleeve 5, 8 being moved toward the sleeve 4 and, owing to its conical shape, being forced against the lining 17, which in its turn is forced against the sleeve 4, so that the pulley 3 is connected with the sleeves 4, 5 and consequently with the rotating shaft 2. The conicity of the parts is such that the connection is effected softly and without shocks. Owing to the conical shape of the part 16 the distance between the said part and the lining 17 is increased as the sleeve 9 is moved inward, in consequence whereof the pulley with its lining will rotate without being in contact with any stationary part. The disconnection is effected by rotating the hand wheel 13 in the opposite direction, so that the sleeve 9 and consequently the sleeve 5 are moved away from the sleeve 4 and the pulley 3 is released. While the sleeve 9 is screwed outward, the conical part 16 of the same is forced against the corresponding part of the lining 17 and thus brakes the pulley, which is desirable for instance when the pulley drives a lathe for wood. During the disconnecting operation a space is left between the sleeves 4, 5 and the lining 17, so that the shaft together with the sleeves, rotates without the latter being in contact with the pulley or its lining.

When the coupling device is used for bringing machine tools into and out of action, it is mounted preferably on the main shaft rotating at suitable speed, the belt being located on the pulley 3 and the pulley of the machine tool. A cone pulley may be substituted for the pulley 3, if desired. If the main shaft, on which the coupling device is mounted, is located at such a height, that the operator cannot reach the wheel 13 by hand, the said wheel 13 may be provided with a groove for a rope or the like, which may be wound round a similar wheel provided on the machine tool, so that the coupling device is brought into and out of operation by pulling the rope in the one or the other direction.

When using the coupling device described above, all other power transmission parts are rendered superfluous and the power can be used directly and without any reduction caused by power transmission shafts or the like. Consequently, the coupling device which is simple and requires small space, is economical in power.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim is:

1. A combined bearing and coupling device for a rope or belt pulley, toothed wheel or the like, having two conical parts provided on a continuously rotating driving part or shaft and co-operating with the hub of the pulley, one of the said parts being fixed to the shaft and the other slidable thereon, and having a mechanism by means of which the slidable part can be brought into and out of engagement with the hub of the pulley for respectively connecting the pulley with the shaft or disconnecting it.

2. A device according to Claim 1 wherein the slidable part is adapted to rotate but not to slide inside a sleeve (9) which is in screw-threaded engagement with the bearing block and by means of which the conical part can be brought into and out of engagement with the hub of the pulley or a lining provided therein.

3. A device according to Claim 2, wherein the sleeve (9) has a conical extension (16) increasing in diameter inward and co-operating with a corresponding conical part of the hub of the pulley or its lining in such a manner that it

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is out of engagement with the pulley when the latter is connected with the shaft but is brought into engagement with the pulley when the latter is disengaged from the shaft in order that the pulley when connected with the shaft may rotate without being in contact with any stationary part and when disconnected from the shaft may be out of contact with rotating parts.

4. The improved combined bearing and coupling device, substantially as hereinbefore described and as illustrated in the accompanying drawings.

Dated this 21st day of January, 1916.

MARKS & CLERK.

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Redhill: Printed for His Majesty's Stationery Office, by Love & Malcomson, Ltd.—1916.

the finger-piece 1 into its normal position shown in Fig. 1 as soon as the pressure of the first finger is diminished. When the first finger presses against the finger-piece 1 its two elastic hooks 4 take into the body of the slide 5 and pull the latter against the action of its spring back into its rear position shown in Fig. 2, in which the cartridge in the magazine projects so far that it is seized by the returning slide and inserted into the barrel. The slide is returned into its normal position owing to the slanting faces 6 of the elastic hooks 4 abutting against fixed stops 7 in the extreme retracted position of the auxiliary finger-piece and, sliding against these stops, being turned downwards, so that their sharp edges release the slide and allow it to fly back into its normal position. The auxiliary finger-piece remains in its retracted position and, when pulled further, abuts against the trigger so that the latter can be moved and one shot after another can be fired. The spring 3 tends to drive the auxiliary finger-piece forward so that the alternating play between the pressure of the finger and the force of the spring causes the auxiliary finger-piece to move to and fro, which is suitable for the delivery of a succession of shots. When the first finger is removed from the auxiliary finger-piece the latter returns into its normal position, whereupon the pistol can be employed in the same manner as any other.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim is:—

1. An automatic pistol having an auxiliary movable finger-piece serving for retracting the slide, wherein the slide which has been retracted is automatically released in the end position, whereupon the slide flies back and the auxiliary movable finger-piece is used like the ordinary trigger, for firing the shot.
2. An improved automatic pistol, constructed and operating substantially as hereinbefore described and also as illustrated in the accompanying drawing.

Dated this 19th day of January, 1916.

MARKS & CLERK. 30

100,029

PATENT



SPECIFICATION

*Convention Date (Germany), Jan. 22, 1915.*

*Application Date (in the United Kingdom), Jan. 22, 1916. No. 1062/16.*

*Complete Accepted, May, 25, 1916*

#### COMPLETE SPECIFICATION.

#### A Process for Ungumming Silk and Silk Waste.

We, the Firm GEBRÜDER SCHMID, of 33, Rittergasse, Basle, in the Republic of Switzerland, Merchants, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

5 This invention relates to a process for ungumming silk and silk waste.  
It is known that silk and silk waste in all forms, as raw material, yarn, and woven fabrics, are freed from sericin (gum) by keeping them for a considerable time in hot soapy water, or in a lather of soap produced by steam, and that the percentage of soap employed is considerable, namely, for the treatment with  
10 soapy water 40 per cent., and for the treatment with soap lather 20 to 30 per cent. by weight of the silk or silk waste under treatment.

It has been found that this percentage of soap used is necessary and cannot be varied without injury to the success of the ungumming. The soap used must however be very good and is therefore dear. Various substances such as soda,  
15 or fine oils, or chemical preparations, by which it has been sought to replace the soap partially, for the ungumming of silk in the form of skeins or of tissues or in form of silk wastes containing no silk-worm chrysalides, have been either directly injurious or too dear. It has always been necessary to stick to a good soap. But behind the desire to find a cheaper substance than soap, there has  
20 always been that of obtaining a substance which would not in any case make the bath more alkaline than the soap, but conversely diminish its alkalinity if possible.

Such a material has been found in the silk waste containing silkworm chrysalides, called gallettamini in Italy and pelettes in France, and in the silkworm chrysalides. Silkworms and the product which is obtained by boiling these in water, as also the silk wastes containing silkworm chrysalides, called gallettamini in Italy and pelettes in France, and the oily water resulting from the boiling of the said silk wastes with water and other silk wastes which are at present utilised almost exclusively as manure, are accessible in such quantity  
30 that their value as manure is scarcely half the price of the soap. In order, for instance, to make an active bath of the soapy water or of soap lather for treating

[Price 6d.]

